

Agricultural Chemical Usage, 2001

The 2001 Chemical Use Summaries for Fruit and Field Crops and the 2000 Nursery and Floriculture Chemical Use Summary provide pesticide use data on 6 Michigan fruit crops, corn, and 12 nursery and floriculture production categories. Michigan State University's Project Generating Research and Extension to meet Environmental and Economic Needs (GREEN) funded the data collection for sweet cherries, grapes, and peaches to maintain the published data series for those crops. Fruit chemical use statistics are published every other year alternating with vegetable chemical use statistics. This is the first publication of nursery and floriculture

chemical use statistics, which provide the percentage of operations reporting an active ingredient. The tables include only a partial listing of the reported active ingredients. The entire series of chemical usage statistics since 1990 for Michigan and the United States can be found at <http://www.usda.gov/nass>. A list of associated trade names is provided following the chemical application tables as an aid in reviewing the data. The list does not mean to imply use of any specific trade name.

Apples: Agricultural chemical applications, 2001¹

Agricultural chemical	Area applied Percent	Applications Number	Rate per application Pounds per acre	Rate per crop year Pounds per acre	Total applied 1,000 lbs
Herbicides					
2,4-D	3	1.0	0.54	0.59	0.7
2,4-D, Dimeth, salt	14	1.3	0.53	0.69	4.2
Diuron	14	1.0	0.75	0.80	5.0
Glyphosate	29	1.5	0.48	0.73	9.4
Norflurazon	1	1.4	0.40	0.60	0.4
Paraquat	16	1.2	0.38	0.47	3.3
Simazine	10	1.0	1.03	1.11	4.9
Terbacil	10	1.0	0.26	0.27	1.3
Insecticides					
Abamectin	13	1.0	0.01	0.01	0.1
Azinphos-methyl	87	3.6	0.63	2.30	89.6
Benzoic acid	46	2.1	0.18	0.37	7.5
Bt (Bacillus thur.) ²	14	1.9			
Carbaryl	39	1.5	0.90	1.35	23.5
Chlorpyrifos	61	1.2	1.02	1.29	34.7
Clofentezine	8	1.0	0.12	0.13	0.4
Dimethoate	6	2.9	0.67	1.97	5.4
Endosulfan	14	1.1	0.91	1.09	7.0
Esfenvalerate	43	1.3	0.03	0.05	0.9
Fenpropathrin	38	1.5	0.22	0.34	5.8
Hexythiazox	7	1.1	0.09	0.10	0.3
Imidacloprid	49	1.4	0.06	0.08	1.8
Indoxacarb	(³)	1.2	0.09	0.11	(⁴)
Methomyl	17	1.3	0.66	0.90	6.8
Permethrin	21	1.1	0.12	0.14	1.3
Petroleum distillate	26	1.2	15.31	19.46	225.0
Phosmet	76	2.8	1.18	3.41	115.6
Pyridaben	38	1.1	0.15	0.18	2.9
Tebufenozide	4	1.2	0.20	0.26	0.5

See footnote(s) at end of table.

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Apples: Agricultural chemical applications, 2001¹ (continued)

Agricultural chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	Number	Pounds per acre	Pounds per acre	1,000 lbs
Fungicides					
Basic copper sulfate	8	1.9	0.52	1.03	3.5
Benomyl	21	1.6	0.19	0.31	2.9
Calcium polysulfide	4	1.9	4.72	9.23	15.3
Captan	91	5.3	1.74	9.34	376.6
Copper hydroxide	22	1.2	1.71	2.07	20.2
Copper oxychlo. sul.	12	1.2	2.11	2.61	13.6
Copper oxychloride	7	1.4	2.17	3.19	9.6
Copper sulfate	10	1.3	1.64	2.14	9.4
Cyprodinil	22	1.6	0.14	0.22	2.1
Dodine	(³)	1.5	1.50	2.26	0.8
Fenarimol	14	2.4	0.05	0.12	0.7
Kresoxim-methyl	36	1.8	0.11	0.21	3.4
Mancozeb	66	3.6	2.41	8.78	257.7
Metiram	27	3.4	2.43	8.31	99.2
Myclobutanil	40	2.9	0.09	0.28	4.9
Oxytetracycline	3	2.5	0.25	0.63	0.9
Streptomycin	42	1.9	0.22	0.42	8.0
Sulfur	40	3.7	3.26	12.25	216.2
Thiram	10	2.4	1.88	4.53	20.4
Triadimefon	22	2.2	0.06	0.13	1.3
Trifloxystrobin	37	1.9	0.06	0.11	1.8
Ziram	45	2.6	2.40	6.39	128.4
Other chemicals					
Benzyladenine	11	1.0	0.03	0.03	0.1
Butenic acid hydro.	2	1.0	0.07	0.08	0.1
Gibberellic acid	6	1.3	0.02	0.02	(⁴)
Gibberellins A4A7	11	1.0	0.00	0.00	(⁴)
NAA	26	1.4	0.03	0.05	0.5
Prohexadione calcium	5	1.0	0.27	0.27	0.6

¹ Bearing acres in 2001 for Michigan were 44,000 acres.

² Rates and total applied are not available because amounts of active ingredient are not comparable between products.

³ Area applied is less than one percent.

⁴ Total applied is less than 50 lbs.

Blueberries: Agricultural chemical applications, 2001¹

Agricultural Chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	Number	Pounds per acre	Pounds per acre	1,000 lbs
Herbicides					
Diuron	29	1.2	0.70	0.84	4.2
Glyphosate	29	1.3	0.41	0.56	2.8
Hexazinone	5	1.0	0.41	0.42	0.4
Paraquat	13	1.2	0.22	0.27	0.6
Simazine	28	1.1	1.20	1.37	6.6
Insecticides					
Azinphos-methyl	70	1.9	0.54	1.06	12.8
Bt (Bacillus thur.) ²	6	1.4			
Carbaryl	35	1.9	1.56	3.09	18.8
Esfenvalerate	13	1.4	0.04	0.06	0.1
Imidacloprid	3	1.0	0.08	0.09	(³)
Malathion	42	2.2	1.81	4.15	30.3
Phosmet	73	2.2	0.84	1.91	24.5
Fungicides					
Benomyl	63	1.9	0.48	0.96	10.6
Captan	60	3.0	2.05	6.27	65.5
Chlorothalonil	26	1.2	2.68	3.36	15.2
Fenbuconazole	33	1.6	0.09	0.14	0.8
Fosetyl-al	7	2.1	3.48	7.50	8.8
Ziram	50	2.3	2.54	5.93	51.8

¹ Bearing acres in 2001 for Michigan were 17,400 acres.

² Rates and total applied are not available because amounts of active ingredient are not comparable between products.

³ Total applied is less than 50 lbs.

Cherries, sweet: Agricultural chemical applications, 2001¹

Agricultural chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	Number	Pounds per acre	Pounds per acre	1,000 lbs
Herbicides					
2,4-D, Dimeth. salt	13	1.2	1.02	1.30	1.2
Glyphosate	40	1.1	0.66	0.74	2.2
Paraquat	21	1.2	0.34	0.42	0.7
Simazine	16	1.0	1.23	1.24	1.5
Insecticides					
Azinphos-methyl	89	3.1	0.50	1.59	10.4
Carbaryl	36	1.1	2.14	2.52	6.7
Chlorpyrifos	5	1.0	0.50	0.50	0.2
Esfenvalerate	50	1.6	0.03	0.05	0.2
Permethrin	37	2.1	0.12	0.25	0.7
Fungicides					
Benomyl	15	1.6	0.43	0.70	0.8
Captan	20	2.0	1.64	3.39	5.1
Chlorothalonil	72	1.8	1.94	3.54	18.9
Copper hydroxide	10	1.2	1.70	2.15	1.6
Dodine	3	1.5	0.53	0.83	0.2
Fenbuconazole	57	3.5	0.08	0.27	1.1
Ferbam	37	2.3	1.96	4.67	12.9
Iprodione	9	1.0	0.91	0.91	0.6
Myclobutanil	12	1.3	0.08	0.11	0.1
Sulfur	78	4.8	4.96	23.99	137.7
Tebuconazole	62	3.2	0.15	0.48	2.2
Ziram	24	2.0	2.11	4.40	7.7
Other chemicals					
Ethephon	69	1.1	0.45	0.50	2.6

¹ Bearing acres in 2001 for Michigan were 7,400 acres.

Cherries, tart: Agricultural chemical applications, 2001¹

Agricultural chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	Number	Pounds per acre	Pounds per acre	1,000 lbs
Herbicides					
2,4-D	1	1.1	0.59	0.68	0.2
2,4-D, Dimeth. salt	15	1.0	0.74	0.81	3.2
Diuron	2	1.1	0.97	1.13	0.7
Glyphosate	45	1.0	0.49	0.53	6.5
Paraquat	24	1.0	0.27	0.28	1.9
Simazine	35	1.0	0.69	0.72	6.9
Insecticides					
Azinphos-methyl	89	2.7	0.49	1.35	33.1
Carbaryl	7	1.2	1.53	1.88	3.6
Chlorpyrifos	8	1.1	0.69	0.82	1.8
Permethrin	17	2.3	0.14	0.33	1.5
Phosmet	70	1.7	0.96	1.67	31.9
Pyridaben	2	1.0	0.20	0.20	0.1
Fungicides					
Benomyl	5	1.6	0.28	0.45	0.6
Calcium polysulfide	2	1.9	2.86	5.61	3.8
Captan	26	3.0	1.15	3.46	25.1
Chlorothalonil	96	2.3	1.74	4.11	108.4
Copper oxychlo. sul.	5	2.1	1.83	3.95	5.0
Dodine	20	3.4	0.50	1.70	9.5
Fenbuconazole	46	2.4	0.08	0.19	2.4
Myclobutanil	30	2.2	0.07	0.15	1.2
Sulfur	90	4.9	3.69	18.25	450.1
Tebuconazole	83	3.4	0.12	0.41	9.2
Ziram	5	2.7	2.45	6.70	9.2
Other chemicals					
Ethephon	78	1.1	0.20	0.24	5.1
Gibberellic acid	38	1.2	0.05	0.06	0.7

¹ Bearing acres in 2001 for Michigan were 27,400 acres.

Grapes, all: Agricultural chemical applications, 2001¹

Agricultural chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	Number	Pounds per acre	Pounds per acre	1,000 lbs
Herbicides					
Glyphosate	78	1.1	0.56	0.66	6.3
Paraquat	71	1.4	0.35	0.50	4.4
Simazine	38	1.2	0.81	0.99	4.6
Insecticides					
Azinphos-methyl	41	1.5	0.60	0.90	4.5
Carbaryl	58	2.2	1.11	2.50	17.8
Fenpropothrin	52	1.7	0.16	0.28	1.8
Phosmet	17	1.5	1.10	1.75	3.6
Fungicides					
Azoxystrobin	28	1.2	0.20	0.26	0.9
Captan	3	2.2	1.66	3.67	1.3
Copper hydroxide	12	1.0	0.66	0.70	1.0
Cyprodinil	2	1.2	0.46	0.58	0.1
Iprodione	3	2.1	0.84	1.77	0.5
Mancozeb	95	3.0	2.24	6.71	78.4
Met라axyl	16	1.2	0.14	0.18	0.4
Myclobutanil	33	1.9	0.09	0.17	0.7
Tebuconazole	55	2.0	0.11	0.22	1.5
Triadimefon	6	1.5	0.11	0.16	0.1
Ziram	85	2.3	2.51	5.83	60.6

¹ Bearing acres in 2001 for Michigan were 12,300 acres.

Peaches: Agricultural chemical applications, 2001¹

Agricultural chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	Number	Pounds per acre	Pounds per acre	1,000 lbs
Herbicides					
2,4-D, Dimeth.salt	6	1.1	0.31	0.37	0.1
Diuron	17	1.1	0.75	0.87	0.7
Glyphosate	21	1.3	0.48	0.63	0.6
Paraquat	43	1.1	0.29	0.34	0.7
Simazine	9	1.0	0.98	1.00	0.4
Terbacil	18	1.0	0.28	0.28	0.2
Insecticides					
Azinphos-methyl	48	2.8	0.68	1.93	4.1
Carbaryl	41	1.9	1.47	2.89	5.3
Chlorpyrifos	12	1.2	2.53	3.06	1.6
Endosulfan	40	1.8	0.77	1.43	2.6
Esfenvalerate	79	2.5	0.04	0.09	0.3
Methomyl	17	1.8	0.45	0.81	0.6
Permethrin	34	2.5	0.11	0.29	0.5
Phosmet	40	1.9	1.05	2.04	3.7
Fungicides					
Basic copper sulfate	5	1.0	0.96	0.96	0.2
Benomyl	8	2.0	0.30	0.62	0.2
Captan	45	2.9	1.69	5.02	10.2
Chlorothalonil	16	1.3	2.04	2.78	2.0
Copper hydroxide	8	1.1	1.77	2.02	0.7
Copper oxychlo. sul.	16	1.0	2.73	2.91	2.1
Copper oxychloride	4	1.0	2.25	2.25	0.4
Copper sulfate	7	1.1	1.77	2.09	0.7
Fenbuconazole	82	2.9	0.09	0.27	1.0
Ferbam	7	1.0	3.58	3.82	1.3
Myclobutanil	12	2.2	0.09	0.20	0.1
Oxytetracycline	28	2.5	0.16	0.40	0.5
Propiconazole	27	1.7	0.10	0.18	0.2
Sulfur	78	4.6	5.72	26.45	92.3
Tebuconazole	11	3.3	0.15	0.50	0.3
Thiophanate-methyl	8	1.0	0.51	0.55	0.2
Ziram	16	1.1	3.37	3.93	2.9
Other chemicals					
E-8 Dodecenyl acetate	12	1.0	0.001	0.001	(²)
Octadecadien (E,Z) ³	11	1.1			(²)
Octadecadien (Z,Z)	11	1.1	0.01	0.01	(²)
Z-8 Dodecanol ³	12	1.0			(²)
Z-8 Dodecen acetate	12	1.0	0.01	0.01	(²)

¹ Bearing acres in 2001 for Michigan were 4,500 acres.

² Total applied is less than 50 lbs.

³ Rates and total applied are not available because amounts of active ingredient are too small.

Nursery propagation or lining out stock: Percent of nursery operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
2,4-D, Dimeth. salt	14	Acephate	8	Chlorothalonil	14	Alk. dim. benzyl 50%	4
Dicamba, Dimet. salt	14	Azinphos-methyl	9	Etridiazole	12	Alk. dim. benzyl 60%	7
Glyphosate	40	Bifenthrin	19	Fosetyl-al	19	Alk. dim. eth. benz.	7
Isoxaben	21	Carbaryl	16	Mancozeb	21	Indolebutyric acid	6
MCPP, DMA salt	14	Chlorpyrifos	35	Mefenoxam	7	Methyl bromide	7
MSMA	14	Diazinon	15	Thiophanate-methyl	36	NAA	6
Oryzalin	23	Diflubenzuron	6				
Oxyfluorfen	20	Lindane	6				
		Malathion	12				

¹ Most commonly used active ingredients.

Coniferous evergreens: Percent of nursery operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
2,4-D	5	Acephate	6	Benomyl	3	Diphenacone	2
Atrazine	7	Bifenthrin	13	Captan	5	Metam-sodium	1
Clopyralid	6	Carbaryl	27	Chlorothalonil	11	Methyl bromide	3
Fluazifop-P-butyl	8	Chlorpyrifos	16	Copper hydroxide	2	Zinc phosphide	1
Glyphosate	49	Hexythiazox	7	Etridiazole	2		
Isoxaben	6	Lindane	6	Mancozeb	5		
Oryzalin	10	Malathion	11	Myclobutanil	2		
Oxyfluorfen	16	Petroleum distillate	10	Thiophanate-methyl	7		
Simazine	22	Piperonyl butoxide	7				
Trifluralin	6						

¹ Most commonly used active ingredients.

Deciduous shade trees: Percent of nursery operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
2,4-D	2	Acephate	20	Captan	7	Bitrex	2
Clopyralid	2	Carbaryl	29	Chlorothalonil	4	Butyl mercaptan	2
Glyphosate	30	Chlorpyrifos	19	Copper hydroxide	4	Capsaicin	2
Isoxaben	9	Diazinon	14	Mancozeb	4	Metaldehyde	5
Oryzalin	12	Dicofol	7			Pelargonic acid	2
Oxyfluorfen	4	Imidacloprid	7				
Paraquat	4	Malathion	13				
Prodiamine	3	Petroleum distillate	16				
Simazine	6	Petroleum oil	8				
Trifluralin	4	Potassium salts	8				

¹ Most commonly used active ingredients.

Deciduous flowering trees: Percent of nursery operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
Glyphosate	47	Acephate	19	Chlorothalonil	16	Capsaicin	3
Isoxaben	7	Carbaryl	24	Copper hydroxide	6		
Oryzalin	19	Chlorpyrifos	3	Etridiazole	13		
Oxyfluorfen	9	Cyfluthrin	5	Fenarimol	7		
Pendimethalin	3	Diazinon	3	Mancozeb	9		
Prodiamine	3	Dicofol	3	Mefenoxam	13		
Sethoxydim	3	Diflubenzuron	3	PCNB	13		
Simazine	13	Dimethoate	6	Propiconazole	7		
Trifluralin	5	Lindane	3	Thiophanate-methyl	35		
		Malathion	3				

¹ Most commonly used active ingredients.

Deciduous shrubs and other ornamentals: Percent of nursery operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
Clopyralid	5	Acephate	21	Chlorothalonil	16	Hydrogen peroxide	3
Fluazifop-P-butyl	6	Bifenthrin	14	Copper hydroxide	12	Indolebutyric acid	11
Glyphosate	21	Carbaryl	24	Fludioxonil	8	Metaldehyde	6
Isoxaben	21	Chlorpyrifos	16	Mancozeb	19	NAA	11
Oryzalin	25	Cyfluthrin	13	Mefenoxam	6	Pelargonic acid	13
Oxadiazon	6	Diflubenzuron	10	Myclobutanil	6	Zinc phosphide	5
Oxyfluorfen	25	Imidacloprid	13	Potassium bicarbon	6		
Prodiamine	6	Lindane	7	Propiconazole	10		
Simazine	10	Malathion	15	Thiophanate-methyl	26		
Trifluralin	23	Petroleum oil	16				

¹ Most commonly used active ingredients.

Christmas trees: Percent of nursery operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals ²	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
Atrazine	12	Azinphos-methyl	7	Benomyl	4		
Clopyralid	10	Carbaryl	35	Chlorothalonil	33		
Fluazifop-P-butyl	6	Chlorpyrifos	49	Copper (metallic)	1		
Glyphosate	49	Cyfluthrin	13	Copper hydroxide	1		
Hexazinone	18	Diflubenzuron	10	Copper resinate	1		
Oryzalin	9	Lindane	15	Mancozeb	9		
Oxyfluorfen	10	Malathion	12	Thiophanate-methyl	1		
Pendimethalin	10	Oxydemeton-methyl	7	Triadimefon	6		
Simazine	30						

¹ Most commonly used active ingredients.

² None reported.

Cut flowers: Percent of floriculture operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
Bromoxynil	4	Abamectin	19	Butanone	28	Capsaicin	4
Fluazifop-P-butyl	4	Acephate	46	Captan	15	Hydrogen peroxide	4
Glyphosate	19	Bifenthrin	19	Chlorothalonil	7		
Isoxaben	3	Endosulfan	11	Copper sulfate	11		
Metolachlor	4			Etridiazole	8		
Oryzalin	11			Iprodione	7		
Trifluralin	39			PCNB	12		
				Thiophanate-methyl	22		
				Trichoderma harz.	7		

¹ Most commonly used active ingredients.

Flowering plants: Percent of floriculture operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
Ammonium benzadox	3	Abamectin	33	Chlorothalonil	14	Ancymidol	7
Atrazine	1	Acephate	23	Copper sulfate	10	Benzyladenine	3
		Azadirachtin	18	Etridiazole	31	Chlormequat chloride	26
		Bifenthrin	15	Fenhexamid	6	Daminozide	24
		Chlorpyrifos	22	Fludioxonil	16	Ethephon	21
		Cyfluthrin	19	Fosetyl-al	7	Gibberellins A4A7	3
		Endosulfan	13	Iprodione	7	Hydrogen peroxide	7
		Fluvalinate	13	Mefenoxam	21	Paclobutrazol	28
		Imidacloprid	59	PCNB	11	Uniconazole	6
		Spinosad	21	Thiophanate-methyl	36		

¹ Most commonly used active ingredients.

Bedding plants: Percent of floriculture operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
Ammonium benzadox	1	Abamectin	33	Chlorothalonil	19	Alk. dim. benzyl 60%	1
Glyphosate	2	Acephate	32	Etridiazole	32	Alk. dim. eth. benz.	1
		Azadirachtin	8	Fludioxonil	12	Ancymidol	3
		Bifenthrin	11	Iprodione	13	Chlormequat chloride	23
		Chlorpyrifos	22	Mancozeb	9	Daminozide	43
		Cyfluthrin	13	Mefenoxam	20	Ethephon	10
		Fluvalinate	9	Metalaxyl	7	Hydrogen peroxide	4
		Imidacloprid	24	PCNB	9	Methyl bromide	2
		Pymetrozine	10	Thiophanate-methyl	43	Paclobutrazol	24
		Spinosad	17	Vinclozolin	7	Uniconazole	7

¹ Most commonly used active ingredients.

Foliage plants: Percent of floriculture operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
Glyphosate	6	Abamectin	27	Chlorothalonil	8	Daminozide	2
		Acephate	23	Copper sulfate	6	Ethephon	13
		Bifenthrin	26	Etridiazole	27	Gibberellic acid	6
		Bt (Bacillus thur.)	14	Iprodione	6	Gliocladium virens	6
		Chlorpyrifos	14	Mancozeb	6	Hydrogen peroxide	8
		Diazinon	13	Mefenoxam	5	Indolebutyric acid	8
		Fluvalinate	24	PCNB	6		
		Imidacloprid	25	Piperalin	6		
		S-Kinoprene	12	Thiophanate-methyl	21		
				Trichoderma harz.	5		

¹ Most commonly used active ingredients.

Floriculture propagation material: Percent of floriculture operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
Isoxaben	6	Chlorpyrifos	24	Chlorothalonil	10	Ancymidol	24
S-Metolachlor	6	Diflubenzuron	5	Copper sulfate	31	Chlormequat chloride	10
		Fluvalinate	6	Etridiazole	9	Daminozide	15
		Imidacloprid	18	Fenhexamid	5	Hydrogen peroxide	6
		Methiocarb	5	Fludioxonil	9	Indolebutyric acid	10
		Petroleum distillate	6	Mefenoxam	4	NAA	10
		Spinosad	5	Myclobutanil	5	Paclobutrazol	15
				PCNB	5		
				Thiophanate	6		
				Thiophanate-methyl	9		

¹ Most commonly used active ingredients.

Herbaceous perennials: Percent of floriculture operations using an active ingredient, 2000¹

Herbicides		Insecticides		Fungicides		Other chemicals	
Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent	Active ingredient	Percent
2,4-D	4	Abamectin	12	Chlorothalonil	26	Daminozide	8
Fluazifop-P-butyl	5	Acephate	24	Etridiazole	12	Hydrogen peroxide	5
Glyphosate	6	Azadirachtin	15	Fenhexamid	10	Metaldehyde	4
Isoxaben	4	Bifenthrin	18	Fludioxonil	5	Paclobutrazol	9
Oryzalin	8	Chlorpyrifos	15	Iprodione	6	Pelargonic acid	8
Oxyfluorfen	2	Cinnamaldehyde	19	Mefenoxam	15	Uniconazole	3
Prodiamine	4	Diflubenzuron	13	PCNB	9		
Trifluralin	2	Imidacloprid	14	Thiophanate-methyl	42		
		Spinosad	17	Trichoderma harz.	7		

¹ Most commonly used active ingredients.

Corn: Agricultural chemical applications, 2001¹

Agricultural chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	Number	Pounds per acre	Pounds per acre	1,000 pounds
Herbicides:					
2,4-D	10	1.0	0.52	0.52	111
Acetochlor	27	1.0	1.68	1.68	996
Altrazine	69	1.0	1.23	1.28	1,940
Clopyralid	22	1.0	0.09	0.09	46
Dicamba	13	1.0	0.23	0.24	70
Dicamba, Dimet, salt	3	1.0	0.08	0.08	5
Diflufenzoxyr-sodium	3	1.0	0.03	0.03	2
Dimethenamid	5	1.0	1.04	1.04	111
Flumetsulam	23	1.0	0.04	0.04	18
Glyphosate	15	1.0	0.82	0.85	272
Metolachlor	6	1.0	1.33	1.33	183
Nicosulfuron	9	1.0	0.02	0.02	3
Pendimethalin	7	1.0	0.88	0.88	142
Rimsulfuron	7	1.0	0.01	0.01	2
S-Metolachlor	26	1.0	1.21	1.21	696
Insecticides					
Chlorpyrifos	9	1.0	1.01	1.01	191

¹ Planted acres in 2001 were 2.20 million acres.

Corn: Fertilizer applications, 2001¹

Fertilizer	Symbol	Area applied	Applications	Rate per application	Rate per crop year	Total applied
		Percent	Number	Pounds per acre	Pounds per acre	Million pounds
Nitrogen	N	91	1.9	65	125	251.3
Phosphate	P ₂ O ₅	78	1.0	48	50	85.9
Potash	K ₂ O	78	1.2	80	102	175.2

¹ Planted acres in 2001 were 2.20 million acres.

Agricultural chemicals: Common and trade names by class

Herbicides		Insecticides	
Common name	Trade name	Common name	Trade name
2, 4-D	several names	Abamectin	Agri-Mek, Avid, Clinch Ant Bait, Zephyr
2, 4-D, Dimeth. salt	Green Light, Riverdale, Saber, Trimec, Weedar, Weedaxe	Acephate	Orthene, Payload
Acetochlor	Degree Xtra, Double Play, Field Master, Harness, Harness Plus, Surpass, TopNotch	Azadirachtin	several names
Ammonium benzadox	Topicide	Azinphos-methyl	Azinphos-M, Guthion, Sniper
Atrazine	several names	Bt (Bacillus thur.)	several names
Bromoxynil	Buctril	Benzoic acid	Intrepid
Clopyralid	Accent Gold, Confront, Curtail, Hornet, Lontrel, Stinger	Bifenthrin	Attain, Brigade, Capture, Talstar
Dicamba	Banvel, Celebrity, Clarity, Fallow Master, North Star, OpTill, Resolve, Weedmaster	Carbaryl	Agway Fruit Tree Spray, Carbaryl, Sevin
Dicamba, Dimeth. salt	Distinct, Green Light, Riverdale, Sterling, Trimec	Chlorpyrifos	several names
Diflufenzoxyr-sodium	Celebrity Plus, Distinct	Cinnamaldehyde	Cinnamate, Valero
Dimethenamid	Guardsman, Frontier, LeadOff, OpTill	Clofentezine	Apollo, Ovation
Diuron	Direx, Diuron, Karmex, Krovar, Sprakil	Cyfluthrin	Baythroid, Decathlon, Duraplex, Tempo
Fluazifop-P-butyl	Fusilade, Fusion, Ornamec	Diazinon	Diazinon, Knox Out, Spectracide, Spectracide 25
Flumetsulam	Accent Gold, Bicep Magnum, Broadstrike, Frontrow, Hornet, Python	Dicofol	Dicofol, Kelthane
Glyphosate	several names	Diflubenzuron	Adept, Dimilin, Micromite
Hexazinone	Velpar	Dimethoate	Cygon, Digon, Dimate, Dimethoate
Ioxaben	Gallery, Snapshot	Endosulfan	Endocide, Endosulfan, Phaser, Thiodan
MCPP, DMA, salt	Green Light, Trimec	Esfenvalerate	Asana
Metolachlor	Bicep, Dual, Dual II, Pennant, Turbo	Fenpropatrin	Danitol, Tame
MSMA	MSMA	Fluvalinate	Mavrik
Nicosulfuron	Accent, Accent Gold, Basis Gold, Celebrity, Steadfast	Hexythiazox	Hexagon, Savey
Norflurazon	Solicam	Imidacloprid	Admire, Marathon, Merit, Provado
Oryzalin	Rout, Snapshot, Surflan	Indoxacarb	Avaunt
Oxadiazon	Pre Pair, Regal, RegalStar, Ronstar	Lindane	Isotox, Lindane
Oxyfluorfen	Goal, OH 2, Regal, Rout	Malathion	Agway Fruit Tree Spray, Cythion, Fyfanon, Green Devil, Malathion
Paraquat	Cyclone, Gramoxone	Methiocarb	Mesurol
Pendimethalin	Corral, OH 2, Pendimax, Pendulum, Prowl, Pursuit Plus, Squadron, Steel, Stomp	Methomyl	Lannate
Prodiamine	Barricade, Factor, RegalStar, Regalkade	Oxydemeton-methyl	Metasystox-R
Rimsulfuron	Accent Gold, Basis, Basis Gold, Matrix, Steadfast	Permethrin	Ambush, Astro, Hot Shot, LastCall, Pounce
S-Metolachlor	several names	Petroleum distillate	several names
Sethoxydim	Poast, Torpedo, Vantage	Petroleum oil	Damoil Dormant Oil Spray
Simazine	Caliber, Princep, Sim-Trol, Simazine	Phosmet	Imidan
Terbacil	Sinbar	Piperonyl butoxide	several names
Trifluralin	Preen, Snapshot, Treflan, Trifluralin, Trilin	Potassium salts	several names
		Pymetrozine	Endeaver
		Pyridaben	Nexter, Pyramite, Sanmite
		S-Kinoprene	Enstar II
		Spinosad	Conserve, NAF-550 Fruit Fly Bait, SpinTor, Success, Tracer
		Tebufenozide	Confirm

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Agricultural chemicals: Common and trade names by class (continued)

Fungicides		Fungicides (continued)	
Common name	Trade name	Common name	Trade name
Azoxystrobin	Abound, Heritage, ICIA5504, Quadris	Trichoderma harzianum	Planter Box, PlantShield, RootShield
Basic copper sulfate	several names	Trifloxystrobin	Compass, Flint
Benomyl	Benlate, Benomyl	Vinclozolin	Curalan, Ornalin, Ronilan, Vorlan
Butanone	Strike	Ziram	Ziram
Calcium polysulfide	Lime Sulfur Solution, Orthorix, Polysul, Sulforix	Other	
Captan	Agway Fruit Spray, Captan, Captec	Alk. dim. benzyl 50%	Consan, Triathlon
Chlorothalonil	several names	Alk. dim. benzyl 60%	several names
Copper hydroxide	several names	Alk. dim. eth. benz.	Consan, Green Shield, Physan, R.D., Triathlon
Copper (metallic)	Bordeaux	Ancymidol	A-Rest
Copper oxychloride	C-O-C-S, Microisperse	Benzyladenine	Accel, BAP, Perlan, Promalin, Typy
Copper oxy. sulfate	C-O-C-S, Copodust, Oxykop	Bitrex	Tree Guard
Copper resinate	Camelot, Copper Fungicide, Tenn-Cop	Butenoic acid hydrochlor.	Retain
Copper sulfate	Basicop, Bluestone, Copper Sulfate, Magna-Bon, Pro- Teck, Phyton, Polydex	Butyl mercapten	Scoot
Cyprodinil	Switch, Vangrad	Capsaicin	Hot Pepper Wax, Hot Sauce
Dodine	Cyprex, Dodine, Syllit	Chlormequat chloride	Animal Repellent, Scoot
Etridiazole	Banrot, Terraclor, Truban	Daminozide	Cycocel
Fenarimol	Lesco, Rubigon	Diphacinone	B-Nine
Fenbuconazole	Enable, Indar	E-8-Dodecenyl acetate	Diphacinone, Ramik
Fenhexamid	Decree, Elevate	Ethephon	Checkmate, Consep, Isomate
Ferbam	Carbamate, Ferbam	Gibberellic acid	Ethrel, Floral, Prep
Fludioxonil	Medallion, Switch	Gibberellins A4A7	Falgro, GibGro, Gibbex, Pro-Gibb, ProVide, RyzUp
Fosetyl-al	Aliette, Prodigy	Gliocladium virens	Accel, Perlan, Promalin, TypRus, Typy
Iprodione	Benefit, Chipco, Rovral	Hydrogen peroxide	SoilGard
Kresoxim-methyl	Cygnus, Sovran	Indolebutyric acid	Oxidate, Zerotol
Mancozeb	several names	Metaldehyde	Dip'n Grow, Early Harvest, Hormex, Hormodin
Mefenoxam	Flouronil, Quell, Ridomil, Subdue	Metam-sodium	Deadline, Metaldehyde, Slug Bait, Slug-Fest, Trail's End
Metalaxyl	Pythium, Ridomil, Subdue	Methyl bromide	Metam Sodium, Sectagon, Vapam MBC-33, Methyl Bromide, Methyl Bromide & Chloropicrin, Tri-con
Metiram	Polyram	NAA	several names
Myclobutanil	Eagle, Laredo, Nova, Rally, RH-144228, Systhane	Octadecadien (E,Z)	Isomate
Oxytetracycline	Mycoshield	Octadecadien (Z,Z)	Isomate
PCNB	Defend, PCNB, Terraclor, Terraguard, Turfcide	Paclobutrazol	Bonzi
Piperalin	Pipron	Pelargonic acid	Scythe, Thinnex
Potassium bicarbonate	Armicarb, FirstStep, Kaligreen	Prohexadione calcium	Apogee
Propiconazole	Banner, Orbit, Tilt	Uniconazole	Sumagic
Streptomycin	Agri-Mycin, Streptomycin	Z-8-Dodecanol	Checkmate, Consep, Isomate
Sulfur	several names	Z-8-Dodecenyl acetate	Checkmate, Consep, Isomate
Tebuconazole	Elite, Folicur	Zinc phosphide	Zinc Phosphide
Thiophanate	Banrot, Cleary, Consyst, Fungo		
Thiophanate-methyl	Duosan, Fungo Flo, Systec, Topsin, Zyban		
Thiram	Rootone, Thiram		
Triadimefon	Bayleton, Reach		

Commercial fertilizer consumption: 1997-2001¹

Item	Year ending June 30				
	1997	1998	1999	2000	2001
	Short tons	Short tons	Short tons	Short tons	Short tons
Primary plant nutrients					
Total N	275,600	248,102	263,948	249,543	238,810
N in multi-nutrients	64,017	58,790	62,713	57,104	55,076
Total P ₂ O ₅	112,286	92,236	94,890	87,001	83,794
P ₂ O ₅ in multi-nutrients	101,154	90,323	92,063	84,539	83,794
Total K ₂ O	246,467	213,954	211,739	202,481	184,568
K ₂ O in multi-nutrients	77,110	66,246	60,635	47,828	47,563
Total plant nutrients	634,354	554,291	570,576	539,024	509,251
Average analysis	44.5	44.8	43.1	42.9	42.6
Total nutrients in multi-nutrients	242,281	215,360	215,411	189,471	186,433
Selected single-nutrient materials					
Ammonium nitrate	9,401	6,483	9,533	5,622	6,287
Anhydrous ammonia	88,775	71,765	68,349	56,757	50,984
Nitrogen solutions	260,369	269,136	300,761	265,544	288,641
Urea	87,173	88,167	98,820	126,452	110,001
Ammonium sulfate	71,007	20,168	20,468	22,477	22,164
Concentrated superphosphate	5,202	3,961	4,880	4,966	3,945
Potassium chloride	271,868	237,257	244,519	250,410	221,427
Multiple-nutrient fertilizers					
N-P-K	434,859	387,053	388,303	361,992	366,861
N-P	125,241	115,178	124,833	115,616	122,840
N-K	31,768	26,527	27,386	22,281	24,353
P-K	11,435	7,891	5,526	4,561	4,771
Leading multiple-nutrient grades					
10-34-0	40,220	35,525	42,668	37,385	40,775
18-46-0	42,223	36,974	37,709	34,569	33,232
11-52-0	8,682	14,860	20,069	24,987	26,571
19-19-19	20,139	18,527	21,201	11,564	13,035
9-24-3		2,917		8,510	9,150
6-24-24	13,385	10,375	12,529	7,891	7,576
Fertilizer consumption by classes					
Dry bulk single-nutrient	490,328	401,282	430,931	452,227	382,845
Dry bagged single-nutrient	8,820	9,267	7,581	7,453	14,862
Fluid single-nutrient	369,706	348,333	371,425	324,357	343,883
Dry bulk multiple-nutrient	349,906	293,499	283,761	259,482	243,576
Dry bagged multiple-nutrient	174,006	179,578	187,767	165,491	188,375
Fluid multiple-nutrient	79,392	63,570	76,463	79,476	86,874
Organics, secondary and micronutrients	20,345	38,839	37,943	39,220	24,729
Total	1,492,503	1,334,370	1,395,870	1,327,707	1,285,144

¹ Source: The Association of American Plant Food Control Officials